4/2- and 4/3-way proportional directional valves, direct operated, without electrical position feedback, without/with integrated electronics (OBE)

Types 4WRA and 4WRAE

Nominal sizes 6 and 10
Component series 2X
Maximum operating pressure 315 bar
Maximum flow: 42 l/min (NS6)
75 l/min (NS10)

Overview of contents

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Features

- Direct operated proportional directional valve without electrical position feedback and integrated electronics (OBE) for type 4WRAE
- Control the direction and magnitude of a flow
- Actuation by means of proportional solenoids with central thread and removable coil
- For subplate mounting:
  Connection position to ISO 4401
  Subplates to catalogue sheets RE 45052 (NS6) or RE 45054 (NS10) separate order, see page 12 to 15
- Spring centred control spool
- Control electronics
  • 4WRAE:
    - integrated electronics (OBE) with voltage input or current input (A1 resp. F1)
  • 4WRA:
    - digital or analogue amplifier in Eurocard format (separate order)
    - analogue module amplifier
### Ordering details

<table>
<thead>
<tr>
<th>Without integrated electronics (OBE)</th>
<th>= No code</th>
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<tbody>
<tr>
<td>With integrated electronics (OBE)</td>
<td>= E</td>
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<tr>
<td>Nominal size 6</td>
<td>= 6</td>
</tr>
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<td>Nominal size 10</td>
<td>= 10</td>
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#### Spool symbols

- **P** → **A**: $q_{V_{max}}$
- **B** → **T**: $q_{V/2}$
- **P** → **B**: $q_{V/2}$
- **A** → **T**: $q_{V_{max}}$

**Note:**

With spools W and WA, in the neutral position, there is a connection from A to T and B to T with approx. 3% of the relevant nominal cross-section.

Further details in clear text

#### Seal material

| V = FKM seals, suitable for mineral oil (HL, HLP) to DIN 51524 |

#### Electronic interfaces A1 or F1

- **A1** = Command value input ± 10 V
- **F1** = Command value input 4 to 20 mA
- **No code** = For 4WRA

#### Electrical connections

- **K4** = Without plug-in connector, with component plug to DIN EN 175301-803 plug-in connector – separate order, see page 7
- **K31** = Without plug-in connector, with component plug to DIN EN 175201-804 plug-in connector – separate order, see page 7

#### Special protection

- **J** = Sea water resistant (only for NS6)

For details regarding the sea water resistant versions see RE 29055-M

**G24** = Supply voltage 24 VDC

#### Nominal flow at a valve pressure differential $\Delta p = 10$ bar

<table>
<thead>
<tr>
<th>NS6</th>
<th>7 l/min</th>
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<tbody>
<tr>
<td>15</td>
<td>15 l/min</td>
</tr>
<tr>
<td>30</td>
<td>26 l/min</td>
</tr>
<tr>
<td>60</td>
<td>26 l/min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NS10</th>
<th>30 l/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>60 l/min</td>
</tr>
</tbody>
</table>

**1)** Other types of electrical protection on request

**2)** Only for NS6: for version "J" = sea water resistant only state "K31"!
Symbols

Without integrated electronics
Type 4WRA...

With integrated electronics (OBE)
Type 4WRAE...

Types 4WRA...EA...; 4WRA...WA...

Types 4WRAE...EA...; 4WRAE...WA...
1 Valve housing
2 Proportional solenoid "a"
3 Proportional solenoid "b"
4.1 Plug-in connector "A", colour grey, separate order, see page 7
4.2 Plug-in connector "B", colour black, separate order, see page 7
5 Name plate
6 Identical seal rings for ports A, B, P and T
7 Plug for valves with one solenoid
   (2 switched positions, versions EA or WA)
8 Space required to remove the plug-in connector
9 Machined valve mounting surface,
   Connection location to ISO 4401 (with locating pin hole)
   Code: 4401-03-02-0-94 (explanation to ISO 5783)
   Deviation from the standard:
   - without locating pin hole "G"
   - ports P, A, B and T mit Ø8 mm

Subplates to catalogue sheet RE 45052 and valve fixing screws must be ordered separately.

Subplates:
- G341/01 (G1/4)
- G342/01 (G3/8)
- G502/01 (G1/2)

Valve fixing screws (separate order)
The following valve fixing screws are recommended:
- 4 S.H.C.S. ISO 4762 - M5 x 50 - 10.9-flZn-240h-L
  (friction value $\mu_{\text{total}} = 0.09$ to 0.14)
  Tightening torque $M_A = 7 \text{ Nm} \pm 10\%$
  Material No. R913000064 (separate order)
  or
- 4 S.H.C.S. ISO 4762 - M5 x 50 - 10.9
  (friction value $\mu_{\text{total}} = 0.12$ to 0.17)
  Tightening torque $M_A = 8.9 \text{ Nm} \pm 10\%$

Tolerances to:
- General tolerances ISO 2768-mK
Unit dimensions: Type 4WRAE 6 ...K31/..V (nominal dimensions in mm)

1. Valve housing
2. Proportional solenoid "a"
3. Proportional solenoid "b"
4. Plug-in connector to DIN EN 175201-804, separate order, see page 7
5. Name plate
6. Identical seal rings for ports A, B, P und T
7. Plug for valves with one solenoid (2 switched positions, versions EA or WA)
8. Integrated electronics (OBE)
9. Space required for the connection cable and to remove the plug-in connector
10. Machined valve mounting surface, Connection location to ISO 4401 (with locating pin hole)

Subplates to catalogue sheet RE 45052 and valve fixing screws must be ordered separately.

Subplates:
- G341/01 (G1/4)
- G342/01 (G3/8)
- G502/01 (G1/2)

Valve fixing screws (separate order)
The following valve fixing screws are recommended:

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  (friction value $\mu_{\text{total}} = 0.09$ to 0.14)
  Tightening torque $M_{T} = 7 \text{Nm} \pm 10\%$
  Material No. R913000064 (separate order)

or

- 4 S.H.C.S. ISO 4762 - M5 x 50 - 10.9
  (friction value $\mu_{\text{total}} = 0.12$ to 0.17)
  Tightening torque $M_{T} = 8.9 \text{Nm} \pm 10\%$

Tolerance to: General tolerances to ISO 2768-mK
Unit dimensions: Type 4WRA 10 (nominal dimensions in mm)

1. Valve housing
2. Proportional solenoid "a"
3. Proportional solenoid "b"
4.1 Plug-in connector "A", colour grey, separate order, see page 7
4.2 Plug-in connector "B", colour black, separate order, see page 7
5. Name plate
6. Valve bleed screw
7. Identical seal rings for ports A, B, P and T (T1)
8. Cover for valves with one solenoid (2 switched positions, versions EA or WA)
9. Space required to remove the plug-in connector
10. Machined valve mounting surface, Connection location to ISO 4401 (with locating pin hole)

Note: The valves are bled before delivery.

Tolerances to:
- General tolerances to ISO 2768-mK

Subplates to catalogue sheet RE 45054 and valve fixing screws must be ordered separately.

Subplates:
- G66/01 (G3/8)
- G67/01 (G1/2)
- G534/01 (G3/4)

Valve fixing screws (separate order)
The following valve fixing screws are recommended:

- 4 S.C.H.S. ISO 4762 - M6 x 40 - 10.9-HIzn-240h-L
  (friction value $\mu_{\text{total}} = 0.09$ to 0.14)
  Tightening torque $M_A = 12.5 \text{ Nm} \pm 10\%$
  Material No. R913000058 (separate order)
  or

- 4 S.C.H.S. ISO 4762 - M6 x 40 - 10.9
  (friction value $\mu_{\text{total}} = 0.12$ to 0.17)
  Tightening torque $M_A = 15.5 \text{ Nm} \pm 10\%$

Unit dimensions: Type 4WRA 10

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Valve housing
Proportional solenoid "a"
Proportional solenoid "b"
Plug-in connector "A", colour grey, separate order
Plug-in connector "B", colour black, separate order
Name plate
Valve bleed screw
Identical seal rings for ports A, B, P and T (T1)
Cover for valves with one solenoid (2 switched positions, versions EA or WA)
Space required to remove the plug-in connector
Machined valve mounting surface, Connection location to ISO 4401 (with locating pin hole)
Code: 4401-05-04-0-94 (explanation to ISO 5783)
Deviation from the standard: Port T1 Ø11.2 mm
Unit dimensions: Type 4WRAE 10 (nominal dimensions in mm)

1. Valve housing
2. Proportional solenoid "a"
3. Proportional solenoid "b"
4. Plug-in connector to DIN EN 175201-804, separate order, see page 7
5. Name plate
6. Valve bleed screw
   **Note:** The valves are bled before delivery.
7. Identical seal rings for ports A, B, P, T
8. Cover for valves with one solenoid (2 switched positions, versions \textit{EA} or \textit{WA})
9. Integrated electronics (OBE)
10. Space required for the connection cable and to remove the plug-in connector
11. Machined valve mounting surface, connection location to ISO 4401 \textit{(with locating pin hole)}
   
   Code: 4401-05-04-0-94 (explanation to ISO 5783)
   
   Deviation from the standard: Port T1 Ø11.2 mm

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**Tolerances to:**

- General tolerances to ISO 2768-mK

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Subplates to catalogue sheet RE 45054 and valve fixing screws must be ordered separately.

**Subplates:**

- G66/01 (G3/8)
- G67/01 (G1/2)
- G534/01 (G3/4)

**Valve fixing screws** (separate order)

The following valve fixing screws are recommended:

- **4 S.H.C.S. ISO 4762 - M6 x 40 - 10.9-flZn-240h-L**
  
  (friction value $\mu_{\text{total}} = 0.09$ to 0.14)
  
  Tightening torque $M_A = 12.5$ Nm ± 10%,
  
  Material No. R913000058 (separate order)

  or

- **4 S.H.C.S. ISO 4762 - M6 x 40 - 10.9**
  
  (friction value $\mu_{\text{total}} = 0.12$ to 0.17)
  
  Tightening torque $M_A = 15.5$ Nm ± 10%